CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE
MEDICAL TOXICOLOGY BRANCH

SUMMARY OF TOXICOLOGY DATA

PHENYL MERCURIC ACETATE

Chemical Code # 000491, Tolerance # 50034
SB 950 # 084

July 30, 1987
Revised: February 1, 1990

I. DATA GAP STATUS

Chronic rat :		Data gap, inadequate studies, possible adverse effect indicated
Chronic dog :		Data gap, no study on file
Onco rat :		Data gap, no study on file
Onco mouse :		Data gap, no study on file
Repro rat :		Data gap, no study on file
Terato rat[b]:	##	No data gap, no adverse effect indicated
Terato rabbit:		Data gap, inadequate studies, possible adverse effect indicated
Gene mutation:		Data gap, inadequate studies, possible adverse effect indicated
Chromosome:		Data gap, inadequate studies, possible adverse effect indicated
DNA damage:		Data gap, inadequate studies, no adverse effect indicated
Neurotox:		Data gap, inadequate study, possible adverse effect indicated

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[a]Note that there are studies on other phenylmercuric salts, however the acetate is the principal form in commerce and the salt employed in most toxicity studies. (See also Tox Summary for the oleate salt: Filename = SB796PMA.CNA)

[b]Unacceptable teratogenicity studies with reported adverse effects in voles and hamsters also on file.

Toxicology one-liners are attached.

All record numbers through ###### were examined.
** indicates an acceptable study.
Bold face indicates a possible adverse effect.
indicates a study on file but not yet reviewed.
File name: T900201
Revised by Kishiyama, 2/1/90

II. TOXICOLOGY ONE-LINERS AND CONCLUSIONS

COMBINED RAT

No studies on file.

CHRONIC RAT

No acceptable or upgradeable studies on file. Some studies of limited value are noted below.

50034-004 4721, "Chronic Oral Toxicities of Mercuri-Phenyl and Mercuric Salts" (publication in Industrial Hygiene and Occupational Medicine by Fitzhugh, O.G. et al., pages 433-442, dated shortly after 1947), phenyl mercuric acetate or mercuric acetate fed in the diet for 2 years at 0, 0.1, 0.5, or 2.5 ppm, 10/sex/group, and at 10.0, 40.0, or 160.0 ppm, 12/sex/group for each compound; **possible** adverse effect (kidney changes at 40.0 and 160.0 ppm); apparent NOEL = 0.1 (kidney damage) UNACCEPTABLE (inadequate number of animals at risk, no analysis of diet, intercurrent disease, no individual data), not upgradeable (excessive mortality). (Remsen 4/8/85)

50034-012 56161 "Toxicological hazards of mercurial paints" (J. of Pharmacyand Pharmacology 9, 469-475, 1957). Mice were housed in cages, the sides of which were painted with one of 4 phenylmercuric paints. Exposure was not measured. No abnormalities were reported on histological examinations. Guinea pigs were fed 0.05 or 0.5 mg/kg/day phenylmercuric dinaphthylmethane disulfonate in bran diet. There were no reported toxic effects (organs were apparently examined only for total mercury: no histology was reported). NOT ACCEPTABLE, noy upgradeable: too few animals, too few measurements, doses not justified in terms of testing a range of toxic effects, etc.. (C. Aldous, 6/26/87). (No review worksheet).

DOG

No studies on file.

ONCOGENICITY RAT

No studies on file.

MOUSE

No studies on file.

REPRODUCTION RAT

No studies on file.

TERATOGENICITY

** 050034 085816, "The Effect of PMA 60 on Pregnancy of the Rat", (Huntingdon Research Centre, Ltd., NDX 6-R/891015, December 1988). PMA 60, purity 95%, administered by gavage at concentrations of 0 (corn oil), 0.75, 3, or 12 mg/ml/day to 25 mated female Sprague-Dawley rats/group on days 6 through 15 of pregnancy. Excessive salivation and hair loss; water consumption increased; food consumption decreased; body weight reduced for the high-dose group. Enlarged spleen (size and weight) for the high dose group and similarly, but to a much lesser extent for the mid-dose group; Maternal NOEL = 0.6 mg/kg/day. Fetal weight reduced at the high dose; Developmental NOEL = 2.5 mg/kg/day. ACCEPTABLE with minor deficiencies. (Kishiyama, 1/31/90).

50034-014 57510 "Embryotoxic and teratogenic effects of phenyl mercuric acetate and methyl mercury chloride in golden hamsters, rats, and rabbits" (Dzierzawski, A., approx. 1978, 1-paragraph English summary: balance of report follows, with English translations of tables). Dams dosed once or three times by gavage between days 5 to 12 of pregnancy with 1/2 to 1/6th of LD_{50}. Resorptions, dead fetuses, developmental retardations, hematomas, and open eyes reported. UNACCEPTABLE: no data, no description of study design, etc. Not upgradeable: design does not allow dose-response evaluation. C. Aldous, 6/26/87, no CDFA review worksheet.

50034-014 57512, "Embryonic Susceptibility of Microtus Ochrogaster (Common Prairie Vole) to Phenyl Mercuric Acetate" (Dept. of Pathology and Dept. of Surgery and Medicine, College of Veterinary Medicine, Kansas State University, published 1976), teratology-833-vole, phenyl mercuric acetate, single intraperitoneal injection at 0.06, 0.125, 0.25, 0.5, 1, 2, or 5 mg/kg body weight on day 7, 8, 9, 10, 11, or 12 of gestation; **embryotoxicity** reported (increased resorptions with 0.06 mg/kg or greater dose, day 9 or 0.125 mg/kg, day 8; no reported maternal toxicity at dosages tested). Study NOT ACCEPTABLE nor upgradeable, due partially to design differences from current standards, however useful data: (Green, C. Aldous 6/26/87, File = 084VOT1.CNA)

GENE MUTATION

50034-006, 011 34086, "Evaluation of PMA-18 in the *Salmonella*/Microsome (Ames) assay" (Midwest Research Institute, Kansas City, MO., #4822-E, 12/4/80), PMA-18, lot #65903 in DMSO, Salmonella strains TA-1535, TA-1537, TA-1538, TA-100, and TA-98; with and without activation in duplicate at 0, 0.1, 0.5, 1.0, 5.0, and 10.0 microgram/plate; no mutagenic effects reported; UNACCEPTABLE, not upgradeable (too few replicates, no repeat experiment to confirm results). (Hughett, Remsen 9/25/85)

50034-014 57501 "Investigations on the Mutagenicity of Two Organo-mercurial Pesticides, Ceresan and Agallol 3, in Drosophila melanogaster" (University of Mysore, India 1985) Ceresan Universal Dry Seed Dressing (1% phenyl mercury acetate) fed to larvae at 0, 2, or 3 ppm and to adults at 0, 50, 100, or 200 ppm; Agallol 3 (3% methoxyethyl mercury chloride) fed to larvae at 0, 6, 9, or 12 ppm and to adults at 0, 300, 450, or 600 ppm; all dose levels in ppm of active ingredient ingredient; induction of dominant lethals, II-III translocations, and sex-linked recessive lethals measured for both materials with both feeding methods; **Possible adverse effect**-dose related increase in sex-linked recessive lethal frequency for adult feeding of Ceresan with significance at the high dose; Incomplete**,** UNACCEPTABLE-supplementary study with formulations, no positive controls, too few progeny scored, no translocation data, too little protocol information, no information on the initial number of males. (Green, Davis 7/7/87) 084DROS2.842

CHROMOSOME

50034-014 57501 Chromosomal effects component of Drosophila study: no chromosomal effect. See one-liner under "Gene Mutation" heading.

50034-013 56740, "Genetic Effects of Organic Mercury Compounds" (Institute of Genetics, University of Stockholm, Sweden; review received for publication 9/15/66) muta-843-drosophila, phenyl mercuric hydroxide and methyl mercuric hydroxide at 0.25 mg/l substrate and methoxyethyl mercuric chloride at 1.25 mg/l substrate; Investigator claims **significant increase in XXY daughters** when phenyl mercuric hydroxide or methyl mercuric hydroxide were administered to larvae or adults. UNACCEPTABLE (no data to support investigator's conclusions) (Green, C. Aldous, 7/20/87, Filename = 084DROS1.842)

DNA DAMAGE

50034-006 and -011 34085, "Evaluation of Nuodex PMA-18 in the E. Coli DNA Repair-Suspension Assay" (Midwest Research Institute, Kansas City, MO., #4822-E, 3/10/81), Nuodex PMA-18, lot # 65903 in DMSO, E. coli strains W3110 (pol A^+) and p3478 (pol A^-), with and without activation in duplicate two trials at 0, 0.016, 0.08, 0.4, 2.0, 10.0, and 20.0 microgram/ml; no significant killing of pol^- reported; UNACCEPTABLE, upgradeable(with submission of dose level rationale for treatment with activation, characterization of test article, and individual plate counts) (Hughett, Remsen 9/25/85)

50034-011 55710, "Evaluation of Nuodex PMO-10 in the E. Coli DNA Repair-Suspension Assay" (Midwest Research Institute, Kansas City, MO., #4822-E, 2/9/81), Nuodex PMO-10 lot #099-245, E. coli strains W3110 (pol A^+) and p3478 (pol A^-), in DMSO with and without activation at 0, 0.016, 0.08, 0.4, 2.0, and 10.0 microgram/ml; no significant preferential killing of pol A reported; UNACCEPTABLE, upgradeable (with submission of dose level rationale, test substance purity, and individual plate counts) (Green, J. Gee, 6/18/87, Filename = 796COLI1.844. This test article was phenylmercuric oleate, and this one-liner is cross-referenced in tox summary for phenylmercuric oleate salt; Filename = SB796PMA.CNA).

NEUROTOXICITY

An appropriate study with a NOEL is needed for subsequent risk evaluation.

50034-014 57505 "Influence of the chronic administration of phenylmercuric acetate on the peripheral nerve system of rat" (Slizewski, M., Neuropath. Pol. 13: 471-477, 1975). Test article was a "Seed Dressing R" (Polish product), 2.4% PMA as active ingredient. Male Wistar rats (approx. 200 g) received 1 ml of 0.3% solution of PMA [presumably 1:7 dilution of the seed dressing product] daily by gavage, i.e. 15 mg/kg, or about 1/4 of LD_{50}. Animal behavior and sciatic nerve velocity were measured weekly. Limited sciatic nerve histological examinations were performed following serial sacrifices up to term of study (70 days). Animals showed progressive inactivity, hindlimb paresis, and decreased nerve conduction velocity. Progressive damage to sciatic nerve was observed histologically: there was progressive destruction of axial fibers and delamination and granulation of the myelin sheaths over the 70-day period. NOT ACCEPTABLE to fill specific data requirements, however useful data. (C. Aldous, 6/26/87).